

# WOOD WASTE REMOVING DEVICE FOR A PLANER

## BACKGROUND OF THE INVENTION

### 5 1. Field of the Invention

This invention relates to a wood waste-removing device for a planer, particularly to one having a knife shaft and a blower synchronously started or stopped in operating by a same motor, simplifying the structure and economizing cost needed in assembling an additional motor.

### 2. Description of the Prior Art

In a planing process, a conventional planer always produces a great deal of wood waste floating about or dropping on the ground to soil a workshop and affect workers' health, and in this condition, large-sized vacuum cleaners have to be employed for removing the wood waste, not only taking much time and labor but also increasing cost in equipment. In view of this condition, the inventor of this invention previously devised a motor blower having functions of wood waste absorption and driving, which he applied for a US patent with the application number 10/126655. The motor blower is additionally installed on a planing table of a planer to remove out wood waste produced in a planing process and then have it collected to keep a workshop clean.

However, although the motor blower is able to

remove wood waste, yet it will increase cost in purchasing and assembling such an additional motor blower on the planing table of a planer, which originally has a motor provided thereon for driving a knife shaft to  
5 operate, and also it will consume much electricity if two motors operate together at the same time, not conforming to economic gain.

### SAMMARY OF THE INVENTION

One objective of the invention is to offer a wood  
10 waste-removing device for a planer, having a blower installed on the planing table of a planer and a transmitting cable connecting the blower and a knife shaft. Thus, the knife shaft and the blower can be synchronously driven by the same motor to operate or  
15 stop to enable the blower to suck and remove wood waste when the knife shaft performs planing of a wood material.

Another objective of the invention is to offer a wood waste removing device for a planer, having a  
20 blower and a knife shaft synchronously driven to operate by the same motor, needless to install an additional motor and able to lower cost and simplify the structure.

### BRIEF DESCRIPTION OF DRAWINGS

This invention will be better understood by  
25 referring to the accompanying drawings, wherein:

Fig. 1 is a front and perspective view of a planer in the present invention:

Fig. 2 is a rear and perspective view of the planer in the present invention:

Fig. 3 is an exploded perspective view of a wood waste-removing device for a planer in the present invention:

Fig. 4 is a specifically exploded perspective view of the wood waste-removing device of a planer in the present invention:

Fig. 5 is a lower perspective view of the wind exhausting shade of the wood waste-removing device for a planer in the present invention:

Fig. 6 is a partial cross-sectional view of the wood waste-removing device for a planer in the present invention: and

Fig. 7 is a perspective view of a transmitting cable disconnected from a knife shaft in the present invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment of a wood waste-removing device for a planer in the present invention, as shown in Figs. 1, 2 and 3, includes a planing table 10, a wind exhausting shade 20, a blower 30 and a transmitting cable 40 as main components combined together.

The planing table 10 positioned on a bottom base by four guide columns (not shown) is provided with a knife shaft 11 for fixing a blade 111 thereon. The knife shaft 11 has one end secured thereon with a belt pulley

12 connected with a motor (not shown) by a belt and driven to rotate by the motor. Further, the knife shaft 11 has the end, on which the belt pulley 12 is located, axially bored with a rectangular insert slot 112 having  
5 its outer edge laterally bored with a threaded hole 113 communicating with the insert slot 112 and crewed therein with a bolt 114.

The wind exhausting shade 20, as shown in Figs. 4 and 5, is assembled above the knife shaft 11 of the  
10 planing table 10, having a wind-exhausting chamber 21 formed between the wind exhausting shade 20 and the topside of the planing table 10. The wind removing shade 20 has its topside bored with a vent hole 22 and its inner upper side provided with an elongate and curved wind  
15 guiding plate 23 projecting vertically to surround part of the outer edge of the vent hole 22 and having two ends respectively extending obliquely at a preset angle to reach the opposite ends of the wind exhausting shade 20 so that wood waste at the opposite sides of the wind  
20 removing shade 20 can be sucked to the vent hole 22 along the wind guiding plate 23.

The blower 30, as shown in Figs. 4 and 6, is composed of a set of wheel-shaped blades 31, an upper and a lower cover 32, 33 and a rotary shaft 34. The two  
25 covers 32, 33 are correspondingly combined together to form an accommodating space in the interior and a wind-exhausting vent at one side. The lower cover 33 has

its lower side bored with a wind inlet 331, while the upper cover 32 has its topside provided with a shaft tube 321 extending upward, having an insert hole 3211 in the center and having its outer edge formed with outer threads 3212. The lower cover 33 is assembled on the topside of the wind exhausting shade 20 and has its wind inlet 331 aligned to the vent hole 22 of the wind removing shade 20. The wheel-shaped blade 31 is received in the accommodating space 35 of the two shades 32, 33, having an elongate shaft hole 311 in the center. The rotary shaft 34 has a rectangular insert slot 341 bored in the upper end and is upward inserted through the elongate shaft hole 311 of the wheel-shaped blades 31, having two bearings 37 fitted thereon. Then, the rotary shaft 34 is positioned in the insert hole 3211 of the upper cover 32 by means of the two bearings 37, which are locked on the upper end of the rotary shaft 34 by a locking nut 38. Thus, the wheel-shaped blade 31 can be pivotally positioned in the accommodating space 35 of the two covers 32, 33 and driven to rotate by the rotary shaft 34.

The transmitting cable 40 consists of a transmitting tube 41 and a steel cable 42. The transmitting tube 41 is a hollow elongate tube curved in a preset shape and has one end extending downward to form a sleeve 411 with a comparatively large diameter. The sleeve 411 has its inner side formed with inner

threads 4111 to be screwed with the shaft tube 321 of the upper cover 32 of the blower 30. The steel cable 42 is received in the transmitting tube 41 and has its opposite ends extending out of the transmitting tube 41 and  
5 respectively formed with a rectangular adapter 421. One adapter 421 of the steel cable 42 extends to a location near the outlet of the sleeve 411 of the transmitting tube 41 to be inserted in the insert slot 341 in the top end of the rotary shaft 34, while the other adapter 421 of the  
10 steel cable 42 has a little part extending out of the transmitting tube 41 and inserted in the insert slot 112 of the knife shaft 11 and locked therein by the bolt 114 in the threaded hole 113 of the knife shaft 11. Thus, the power of the knife shaft 11 can be transmitted to the  
15 rotary shaft 34 of the blower 30 by the steel cable 42 in the transmitting tube 41.

In operating, as shown in Figs. 3 and 4, when a motor (not shown) drives the belt pulley 12 of the knife shaft 11 to rotate by a belt, the knife shaft 11 will start  
20 to rotate and carry out planing and the steel cable 42, which is fixed on one end of the knife shaft 11, will synchronously be actuated to rotate and drive the rotary shaft 34, which is connected with the other end of the steel cable 42, to rotate together with the blade 31 of the  
25 blower 30.

Referring to Fig. 6, the set of the blades 31 of the blower 30 is positioned in the accommodating space 35

formed by the upper and the lower cover 32, 33; therefore when the blade 31 rotates, there will produce a vacuum sucking force around the wind inlet 331 of the lower cover 33 to suck the wood waste produced during planing into the accommodating space 35 of the blower 30 through the vent hole 22 of the wind exhausting shade 20 and the wind inlet 331 of the lower cover 33. As the wind exhausting shade 20 assembled under the lower cover 33 is provided with the curved wind guiding plate 23 on the inner upper side, therefore wood waste produced at the opposite sides of the knife shaft 11 can also be sucked in the vent hole 22 of the wind exhausting shade 20 and the wind inlet 331 of the lower cover 33 along the wind guide plate 23. Subsequently, the wood waste sucked in the accommodating space 35 of the blower 30 through the wind inlet 331 of the lower cover 33 is removed out through the wind-exhausting vent 36 at one side of the two covers 32, 33 and through a wind-exhausting pipe (not shown) to be collected.

Evidently, the blower 30 of the wood dust removing device in the present invention is directly driven to operate by the knife shaft 11 through the transmitting cable 40, and the knife shaft 11 is driven to rotate by a motor; therefore the blower 30 and the knife shaft 11 can be synchronously started to operate or stop. In other words, when the knife shaft 11 is started to carry out planing, the blower 30 will be actuated to

remove wood waste at the same time, and when the knife shaft 11 stop planing, the blower 30 will automatically stop functioning, convenient in use. Besides, the blower 30 and the knife shaft 11 are driven to operate by the same motor, thus simplifying the structure of the planing table 10, saving cost needed in installing an additional motor and conforming to economic gain.

While the preferred embodiment of the invention has been described above, it will be recognized and understood that various modifications may be made therein and the appended claims are intended to cover all such modifications that may fall within the spirit and scope of the invention.

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